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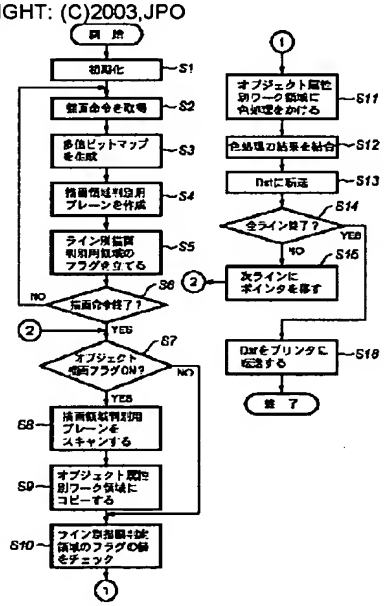
(54) IMAGE PROCESSING METHOD AND DEVICE, ITS STORAGE MEDIUM AND PROGRAM PRODUCT

(57) Abstract:

PROBLEM TO BE SOLVED: To perform color processing classified by object attribute at high speed by using a small quantity of memory, and to output the result on a printer device.

SOLUTION: A multivalued bitmap is generated following a drawing instruction (S3), and an attribute bitplane having a plane for drawing area determination corresponding to the attribute of an object included in the multivalued bitmap and having a flag bit set on an address corresponding to a coordinate value where the object of the multivalued bitmap of the plane exists is generated. Each attribute bitplane is scanned, and multivalued data corresponding to the multivalued bitmap are stored in an address of the attribute bitplane where the flag bit is set, and the color processing is performed to the stored multivalued data, and each attribute bitplane corresponding to each object subjected to the color processing is composed and transferred to a printer device.



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(54) **IMAGE PROCESSING METHOD AND DEVICE, ITS STORAGE MEDIUM AND PROGRAM PRODUCT**

(57)Abstract:
PROBLEM TO BE SOLVED: To perform color processing classified by object attribute at high speed by using a small quantity of memory, and to output the result on a printer device.
SOLUTION: A multivalued bitmap is generated following a drawing instruction (S3), and an attribute bitplane having a plane for drawing area determination corresponding to the attribute of an object included in the multivalued bitmap and having a flag bit set on an address corresponding to a coordinate value where the object of the multivalued bitmap of the plane exists is generated. Each attribute bitplane is scanned, and multivalued data corresponding to the multivalued bitmap are stored in an address of the attribute bitplane where the flag bit is set, and the color processing is performed to the stored multivalued data, and each attribute bitplane corresponding to each object subjected to the color processing is composed and transferred to a printer device.

CLAIMS

[Claim(s)]
[Claim 1]When a printing instruction is published by the software for controlling printer equipment from an operating systemA bit map generation means to be the image processing system which develops the bit map information included in the printing instruction concerned by the multiple value, and to generate a multiple-value bit map according to a drawing instruction, It has a plane for a drawing field judging corresponding to the attribute of the object contained in said multiple-value bit map. An attribute bit plane generation means to generate the attribute bit plane which set the flag bit to the address corresponding to the coordinate value with which the object of said multiple-value bit map of the plane concerned exists, A storing means to store the multiple-value data corresponding to said multiple-value bit map in the address of said attribute bit plane with which each of said attribute bit plane is scanned, and said flag bit is set, A color processing means to perform color processing to said multiple-value data stored by said storing means, The image processing system characterized by having a transfer means to compound said attribute bit planes corresponding to each object by which color processing was carried out with said color processing means, and to transmit to said printer equipment.
[Claim 2]The flag bit for judging whether said attribute bit plane generation means has drawing data according to the attribute of an object in the Rhine unit which draws is set to the field for Rhine another drawing judging. Said storing means checks the flag bit of the field for Rhine another drawing judging concerned, before scanning said attribute bit plane. The image processing system according to claim 1 characterized by skipping the scan of said flag bit in said attribute bit plane according to the attribute of the object of the Rhine concerned when the flag bit of the object of a predetermined attribute is not set.
[Claim 3]Said color processing means is an image processing system according to claim 1 characterized by the thing of contents [of color correction], color transform coefficient, or binary-ized processing for which either is changed at least according to the attribute of said object.
[Claim 4]Said color processing means is an image processing system given in claim 1 characterized by the thing of color correction, color transform coefficient, and n value-ized processing for which either is changed at least with an attribute thru/or any 1 term of 3.
[Claim 5]When a printing instruction is published by the software for controlling printer equipment from an operating systemThe bit map generation process which is the image-processing approach in the image processing system which develops the bit map information included in the printing instruction concerned by the multiple value, and generates a multiple-value bit map according to a drawing instruction, It has a plane for a drawing field judging corresponding to the attribute of the object contained in said multiple-value bit map. The attribute bit plane generation process which generates the attribute bit plane which set the flag bit to the address corresponding to the coordinate value with which the object of said multiple-value bit map of the plane concerned exists, The storing process which stores the multiple-value data corresponding to said multiple-value bit map in memory to the address of said attribute bit plane with which each of said attribute bit plane is scanned, and said flag bit is set, The image-processing approach characterized by having color down stream processing which performs color processing to said multiple-value data stored in said memory, and the transfer process which compounds said attribute bit planes corresponding to each object by which color processing was carried out by said color down stream processing, and is transmitted to said printer equipment.

[Claim 6]The flag bit for judging whether like said attribute bit plane

generation handiwork, drawing data are according to the attribute of an object in the Rhine unit which draws is set to the field for Rhine another drawing judging. At said storing process, before scanning said attribute bit plane, the flag bit of the field for Rhine another drawing judging concerned is checked. The image-processing approach according to claim 5 characterized by skipping the scan of said flag bit in said attribute bit plane according to the attribute of the object of the Rhine concerned when the flag bit of the object of a predetermined attribute is not set.
[Claim 7]The image-processing approach according to claim 5 characterized by the thing of contents [of color correction], color transform coefficient, or binary-ized processing for which either is changed at least in said color down stream processing according to the attribute of said object.
[Claim 8]The image-processing approach given in claim 5 characterized by the thing of color correction, color transform coefficient, and n value-ized processing for which either is changed at least with an attribute in said color down stream processing thru/or any 1 term of 7.
[Claim 9]It is the storage in which read is possible by the computer characterized by memorizing the program which performs the image-processing approach of a publication in claim 5 thru/or ** any 1 term.
[Claim 10]When a printing instruction is published by the software for controlling printer equipment from an operating systemThe bit map generation process module which is the program product which performs the image processing which develops the bit map information included in the printing instruction concerned by the multiple value, and generates a multiple-value bit map according to a drawing instruction, It has a plane for a drawing field judging corresponding to the attribute of the object contained in said multiple-value bit map. The attribute bit plane generation process module which generates the attribute bit plane which set the flag bit to the address corresponding to the coordinate value with which the object of said multiple-value bit map of the plane concerned exists, The storing process module which stores the multiple-value data corresponding to said multiple-value bit map in memory to the address of said attribute bit plane with which each of said attribute bit plane is scanned, and said flag bit is set, The color down-stream-processing module which performs color processing to said multiple-value data stored in said memory, The program product characterized by having the transfer process module which compounds said attribute bit planes corresponding to each object by which color processing was carried out with said color down-stream-processing module, and is transmitted to said printer equipment.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]This invention relates to the image-processing approach and equipment which perform the image processing which develops the bit map information included in the printing instruction concerned by the multiple value, its storage, and a program product, when a printing instruction is published by the software for controlling printer equipment from an operating system.

[0002]
[Description of the Prior Art]With computer vessels, such as a personal computer, programs, such as a printer driver changed and outputted to the printing command which suited the printer equipment connected, for example, are memorized by the hard disk etc. And if a printing command is published by the application program, it is printing by changing the data from the application program into a receipt, changing it into the printing command for the printer equipments, and outputting to printer equipment. In processing by such printer driver, bit data were

developed to the multiple-value bit map field with a drawing instruction, and when processing of all drawing instructions was completed, color processing (color correction, color conversion, formation of 2(n) value) was processed to the whole multiple-value bit map field. For this reason, color processing for every attribute of each object contained in that drawing instruction was not completed. Moreover, recently, after having an original logical operation processing facility and performing color processing using such a data-processing function, there is a driver which performs color processing according to an attribute to each object by writing the concentration data in a direct device.

[0003]Moreover, there is a driver which performs color processing according to attribute of an object by using the 1 bit driver of three planes, developing a bit map to each color plane, scanning each of that created color plane, and judging which object it is from the list of a bit.
[0004]
[Problem(s) to be Solved by the Invention]Although it had original logical operation processing for each attribute of the conventional object by the driver which carries out color processing, when logical operation processing was performed into the part outputted using UCR (Under Color Removal: bottom color removal), there was a case where the output became inaccurate. Moreover, in order to avoid such fault, when the UCR function was made into the invalid, there was a fault that a high-definition image output was not obtained.
[0005]Moreover, there is printer equipment as for which the minimum output unit is made to a multiple value by high performance-ization of the latest printer equipment. Although it is necessary to create a brush object for every drawing instruction in the printer driver which carries out color processing according to the attribute of the conventional object since it corresponds to neutral colors, starting processing speed will fall [a load] to the n value-ized part of the brush for making multiple-value data remarkably. Moreover, in n value-ized processing, when the value of n became large, there was a fault which correction of many source codes is needed since it corresponds to it, therefore a man day cuts in many.
[0006]Moreover, the color information under drawing instruction is set up according to the attribute of an object at RGB (Red, Green Blue), the 1 bit driver of three planes is used, each color plane which carried out bit map expansion and which was created for every color plane is scanned, it judges which object it is from the list of the bit in each color plane, and the approach of apply the color processing suitable for the attribute of the object to a multiple-value bit map is also proposed. However, by such approach, in order to memorize the image data for three planes, a lot of memory space was needed, and further, since it was necessary to scan each color planes (three planes) of all of RGB, the image processing had the fault that starting processing speed fell [a load] remarkably.
[0007]This invention was made in view of the above-mentioned conventional example, makes easy color processing according to object attribute, and it aims at offering the image-processing approach and equipment with which the high-definition output by the optimal color processing for all objects is obtained, its storage, and a program product.
[0008]Moreover, the purpose of this invention is to offer the image-processing approach and equipment which can prevent the fall of the creation processing speed of the print data outputted to printer equipment, its storage, and a program product.
[0009]Moreover, the purpose of this invention is to offer the image-processing approach and equipment which can perform color processing according to object attribute at a high speed using little memory, its storage, and a program product.
[0010]
[Means for Solving the Problem]In order to attain the above-mentioned purpose, the image processing system of this invention is equipped with the following

configurations. Namely, when a printing instruction is published by the software for controlling printer equipment from an operating systemA bit map generation means to be the image processing system which develops the bit map information included in the printing instruction concerned by the multiple value, and to generate a multiple-value bit map according to a drawing instruction, It has a plane for a drawing field judging corresponding to the attribute of the object contained in said multiple-value bit map. An attribute bit plane generation means to generate the attribute bit plane which set the flag bit to the address corresponding to the coordinate value with which the object of said multiple-value bit map of the plane concerned exists, A storing means to store the multiple-value data corresponding to said multiple-value bit map in the address of said attribute bit plane with which each of said attribute bit plane is scanned, and said flag bit is set, It is characterized by having a color processing means to perform color processing to said multiple-value data stored by said storing means, and a transfer means to compound said attribute bit planes corresponding to each object by which color processing was carried out with said color processing means, and to transmit to said printer equipment.

[0011]In order to attain the above-mentioned purpose, the image-processing approach of this invention is equipped with the following processes. Namely, when a printing instruction is published by the software for controlling printer equipment from an operating systemThe bit map generation process which is the image-processing approach in the image processing system which develops the bit map information included in the printing instruction concerned by the multiple value, and generates a multiple-value bit map according to a drawing instruction, It has a plane for a drawing field judging corresponding to the attribute of the object contained in said multiple-value bit map. The attribute bit plane generation process which generates the attribute bit plane which set the flag bit to the address corresponding to the coordinate value with which the object of said multiple-value bit map of the plane concerned exists, The storing process which stores the multiple-value data corresponding to said multiple-value bit map in memory to the address of said attribute bit plane with which each of said attribute bit plane is scanned, and said flag bit is set, It is characterized by having color down stream processing which performs color processing to said multiple-value data stored in said memory, and the transfer process which compounds said attribute bit planes corresponding to each object by which color processing was carried out by said color down stream processing, and is transmitted to said printer equipment.

[0012]

[Embodiment of the Invention]Hereafter, the gestalt of suitable operation of this invention is explained to a detail with reference to an accompanying drawing.

[0013]Drawing 1 is the block diagram showing the example of a configuration of the information processing system with which the image printing art concerning the gestalt of operation of this invention is applied.

[0014]In drawing 1, 1 is a central processing unit, can read storages, such as a control program concerning the gestalt of this operation and FD that associated data is remembered to be, CD-ROM, and IC memory card, from the medium reader 6 connected to this system, and can memorize and perform them to main storage 2. Moreover, with the system program loaded to main storage 2 from the auxiliary storage unit 3, and an application program, the information inputted from an input unit 4 can be processed, and it can output to an output unit 5 or a printer 7. In addition, the output unit 5 is used as displays, such as a display of liquid crystal, CRT, etc., with the gestalt of this operation. Moreover, the input device 4 has pointing devices, such as a keyboard and a mouse. An auxiliary storage unit 3 may consist of a hard disk and a magneto-optic disk, and may be constituted combining these. Moreover, these equipments mentioned above may be connected through the network. ROM8 has memorized various data, such as control data peculiar to the computer machine containing a central processing unit 1 and main storage 2.

[0015]Drawing 2 is the conceptual diagram of processing until the program code and the various data relevant to the control program which performs the image-processing approach concerning the gestalt of this operation stored in the medium reader 6 or the auxiliary storage unit 3 are read into the central-process arithmetic unit 1, a printing instruction is inputted from an input device 4 and it outputs and prints record data to a printer 7. In addition, with the gestalt of this operation, application 201 and a driver 200 function under control of OS202.
[0016]Drawing 3 is drawing which explains the processing in the driver 200 concerning the gestalt of this operation in detail.
[0017]If a drawing instruction is sent from OS202, color correction will be performed to the color data of the multiple value in the drawing instruction (step S1). Next, at step S2, it develops to the bit map 210 of a multiple value using the color data which carried out color correction by step S1. A flag bit is stood according to the attribute of a drawing instruction at the plane 211 for an object attribute judging at the same time it develops to a bit map here. Next, it transmits to the field for the processing according to object attribute according to the object attribute which corresponds the bit map 210 of this created multiple value while referring to the flag bit of the plane for an object attribute judging (for example, a text, a frame, an image, etc. are another), and proper color conversion is performed according to each object attribute (step S3), and 2(n) value-ized processing is performed by step S4, and it changes into the device bit map 212.
[0018]In this way, after the processing to all objects is completed, it progresses to step S6, and the device bit map 212 of the field for the processing according to object attribute is combined, and the united device bit map is transmitted to a printer 7.
[0019]In addition, also before developing to a bit map, any after developing to a bit map are sufficient as the timing to which the color correction in step S1 is applied.
[0020]Drawing 4 (A) thru/or (E) are drawings which were simplified as a data format and expressed the plane for drawing field distinction based on the multiple-value bit map obtained in this way.
[0021]A flag bit is stood according to an object attribute by each [these] plane in the same coordinate location as the bit map of a multiple value. With the gestalt of this operation, in the attribute of a text object, the attribute of a graphics object shall be expressed with "2", the attribute of an image object shall be expressed with "1" "4", and the other field shall be initialized "0."
[0022]Drawing showing an example of the multiple-value image with which drawing 4 (A) was obtained, and drawing 4 (B) are drawings explaining the field flag bit for distinction of each drawing field. Moreover, each of drawing 4 (C) - (E) is drawing explaining each example of data of a text, graphics, and the plane fields 1-3 of an image.
[0023]Drawing 4 (C) shows the plane field shown in the field 1 of drawing 4 (A), and the text flag bit equivalent to the text "an alphabetic character" of drawing 4 (A) is set here. That is, flag bit"1" which shows a text object is set to the part applicable to the coordinate by which the text of a multiple-value bit map is drawn in this plane for drawing field distinction.
[0024]the same -- drawing 4 -- (-- D --) -- drawing 4 -- (-- A --) -- a field -- two -- being shown -- having -- a plane -- a field -- being shown -- here -- **** -- drawing 4 -- (-- A --) -- graphics -- 401 -- corresponding -- graphics -- a flag bit -- setting -- having -- **** -- a multiple value -- a bit map -- graphics -- drawing -- having -- **** -- a coordinate -- corresponding -- a part -- graphics -- an object attribute -- being shown -- a flag bit -- " -- two -- " -- setting -- having -- **** .
[0025]Furthermore, drawing 4 (E) shows the plane field shown in the field 3 of drawing 4 (A), the image flag bit which is equivalent to the photograph 402 of drawing 4 (A) here is set, and image flag bit"4" is set to the part applicable to

the coordinate by which this photograph is drawn.
[0026]Drawing 5 (A) and (B) are drawings which were simplified as a data format and expressed the flag bit of the field for Rhine another drawing judging based on the image of a multiple-value bit map shown in drawing 4.
[0027]Drawing 5 (A) shows an example of a multiple-value image, and the text data showing a text "an alphabetic character", the graphics data which shows graphics 401, and the image data which shows a photograph 402 are memorized here. Drawing 5 R> 5 (B) shows the flag of Rhine another drawing judging field obtained from this multiple-value image. Here, the 1-page memory for Rhine is beforehand initialized by "0", and the flag bit of the object attribute drawn by the field applicable to Rhine drawn with a drawing instruction is stood. And when all the drawing commands are completed, Rhine checks the flag bit of the field for Rhine another drawing judging, and the object attribute flag bit does not stand skips the scan of the plane for drawing field distinction of drawing 4. In addition, in drawing 5 (B), flag bit"5" shows Rhine where both image flag bit "4" and text flag bit" 1" (OR of two flag bits) is set.
[0028]Drawing 6 (A) - (D) is drawing explaining how to perform color processing to what copied data to the work-piece field classified by object attribute from the multiple-value bit map based on the plane for a drawing field judging, and copy to the destination.
[0029]As shown in drawing 6 (A), data are copied according to an object attribute from a multiple-value bit map to the work-piece field classified by object attribute based on the plane for drawing field distinction about the processing field 404 (an equivalent for one-line width of face) of the height 1 shown in the multiple-value bit map containing the text data showing an "alphabetic character", and the graphical data showing graphics 403. After applying the color processing according to object attribute (a text and graphics) to each work-piece field classified by object attribute, from the value of the flag bit of the above-mentioned field for Rhine another drawing judging, the data of the drawn work-piece field classified by object attribute are compounded by the OR, and it copies to the destination.
[0030]Drawing 6 (B) shows the work-piece field classified by object attribute (text), and drawing 6 (C) shows the work-piece field classified by object attribute (graphics). And drawing 6 (D) shows the data of the work-piece field transmitted to the destination, and the OR of the data of drawing 6 (B) and drawing 6 (C) is taken here.
[0031]Drawing 7 shows the condition that the control program which performs the image-processing approach concerning the gestalt of this operation, and its associated data are loaded to a computer (PC) 700 through FD701 which is a storage. If this FD701 is set in the medium reader 6, by reading the control program which performs the image-processing approach concerning the gestalt of this operation on the radical of control of OS202 read into main storage 2, and a basic I/O program, and its associated data from FD701, and installing them in main storage 2, activation of that program will be attained and actuation of it will be attained.
[0032]Drawing 8 is drawing showing the condition of a memory map that the control program which performs the image-processing approach concerning the gestalt of this operation is stored in FD701.
[0033]Drawing 9 is drawing explaining the memory map of this main storage 2 when the control program which performs the image-processing approach concerning the gestalt of this operation stored in FD701 is loaded to main storage 2 from an auxiliary storage unit 3 through the medium reader 6.
[0034]In drawing 9, the associated data 902 is remembered to be a basic I/O program (BIOS), OS202, and the image-processing approach control program 901 concerning the gestalt of this operation by main storage 2 (RAM).

[0035]Although the gestalt of this operation showed the example which reads into main storage 2 directly the control program 901 which performs the image-processing approach concerning the gestalt of this operation through an

auxiliary storage unit 3, and performs it from FD701, when the control program 901 which performs this image-processing approach is beforehand installed in the auxiliary storage units 3, such as HD, from storages, such as FD701, and that activation is directed, it is very good in the gestalt which loads to main storage 2 and is performed.
[0036]Moreover, as a storage which records the control program 701 which performs the image-processing approach concerning the gestalt of this operation, you may be a magneto-optic disk, CD-ROM, IC memory card, etc. besides FD and HD. Moreover, it is also possible to memorize beforehand the control program 901 which performs the image-processing approach concerning the gestalt of this operation to ROM.
[0037]Drawing 10 is an outline flowchart of a program 901 which performs the image-processing approach concerning the gestalt of this operation. As mentioned above, the control program which performs this processing may be read in the medium reader 6, or may be memorized by the auxiliary storage unit 3.

[0038]If an instruction is inputted on the occasion of this processing so that printing may be first performed from an input unit 4, OS202 will receive that message among OS202 and the driver 200 which were read into main storage 2 from the auxiliary storage unit 3, or application (drawing 2). OS202 sends a printing activation message to application active now. Application 201 changes the message into the command which can recognize OS202, and sends the message of print data or a command. And OS202 is changed into the command which can recognize a driver 200, and sends a message.
[0039]In this way, if the message for initialization is sent to a driver 200, it will progress to step S1, and the plane for drawing field distinction, the plane for multiple-value bit map expansion, the work-piece field classified by object attribute, and the field for Rhine another drawing judging are allocated in main storage 2, and each contents are cleared by "0."
[0040]Next, it progresses to step S2 and a driver 200 acquires the drawing instruction sent from OS202. Next, it progresses to step S3 and a bit map is generated to the plane for multiple-value bit map expansion. Next, it progresses to step S4, and from a drawing instruction, it distinguishes in the drawing instruction of which object, and the flag bit defined as the plane for drawing field distinction for every object attribute is stood to the coordinate which the plane for multiple-value bit map expansion drew, and the same coordinate. Moreover, at step S5, when it draws to the plane for drawing field distinction, based on the Y coordinate, the flag bit of the object attribute applicable to the Rhine location where the field for Rhine another drawing judging corresponds is stood. In this way, it progresses to step S6, it investigates whether processing of all drawing commands was completed, when having not ended, it returns to step S2, and the above-mentioned processing is performed.
[0041]It is confirmed whether, on the other hand, the flag bit of which object is rising from the head of the field for Rhine another drawing judging at step S6 by progressing to step S7, when processing of all drawing commands is completed. If the flag bit of the field for Rhine another drawing judging stands here, it will progress to step S8 and the plane for drawing field distinction will be scanned. And by step S9, the data of the field for multiple-value bit map expansion of the coordinate the flag bit stands are copied to the corresponding work-piece field classified by object attribute from the value of a flag bit, and it progresses to step S10. On the other hand, when an object drawing flag is OFF at step S7, it progresses to step S10.
[0042]In step S10, after scanning the whole of one line, the value of Rhine where the field for Rhine another drawing judging corresponds is checked, and color processing is applied to the data of the drawn work-piece field classified by object attribute from the value at step S11. And it progresses to step S12, the data of the field for the processing according to object attribute where the color processing was applied are compounded by the OR, and it copies to the destination at step S13. In this way, it progresses to step S14, it judges

whether processing of all Rhine was completed, when no processing of Rhine is completed, it progresses to step S15, and the pointer of the field for multiple-value bit map expansion and the field for Rhine another drawing judging is carried forward to next Rhine, and it returns to step S7. On the other hand, at step S14, after processing of all Rhine is completed, it progresses to step S16, and the data of the destination are transmitted to a printer 7, and processing is ended.

[0043]In addition, as a printer 7 in the gestalt of the above-mentioned implementation, you may be the other invar in DINGU printer also by the binding-type printer which prints in bandwidth.

[0044]Moreover, although print data were transmitted to the printer 7 per two or more lines with the gestalt of the above-mentioned operation, as for this invention, it is needless to say that it is not limited to this, and data may be transmitted to a printer per one line, for example, you may print.

[0045]In addition, even if it applies this invention to the system which consists of two or more devices (for example, a host computer, an interface device, a reader, a printer, etc.), it may be applied to the equipments (for example, a copying machine, facsimile apparatus, etc.) which consist of one device.

[0046]Moreover, the purpose of this invention supplies the storage (or record medium) which recorded the program code of the software which realizes the function of the operation gestalt mentioned above to a system or equipment, and is attained also by reading and performing the program code with which the computer (or CPU and MPU) of the system or equipment was stored in the storage. In this case, the function of the operation gestalt which the program code itself read from the storage mentioned above will be realized, and the storage which memorized that program code will constitute this invention. Moreover, by performing the program code which the computer read, a part or all of processing that the operating system (OS) which the function of the operation gestalt mentioned above is not only realized, but is working on a computer based on directions of the program code is actual is performed, and also when the function of the operation gestalt mentioned above by the processing is realized, it is contained.

[0047]Furthermore, after the program code read from the storage is written in the memory with which the functional expansion unit connected to the functional expansion card inserted in the computer or the computer is equipped, a part or all of processing that CPU with which the functional expansion card and functional expansion unit are equipped is actual performs, and also when the function of the operation gestalt mentioned above by the processing is realized, it is contained based on directions of the program code.

[0048]As explained above, according to the gestalt of this operation, distinction of an object attribute is attained, and a high-definition image output can be obtained by carrying out color processing optimal according to the attribute of an object in a short time.

[0049]

[Effect of the Invention]As explained above, according to this invention, color processing according to object attribute is made easy, and it is effective in the high-definition output by the optimal color processing for all objects being obtained.

[0050]Moreover, according to this invention, it is effective in the ability to prevent the fall of the creation processing speed of the print data outputted to printer equipment.

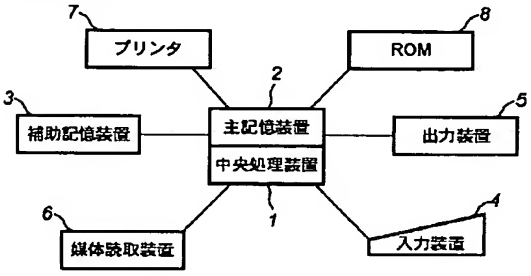
[0051]Moreover, according to this invention, it is effective in the ability to perform color processing according to object attribute at a high speed using little memory.

DESCRIPTION OF DRAWINGS

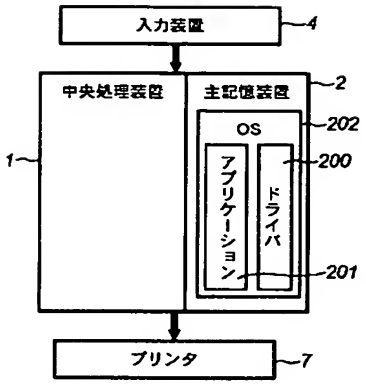
[Brief Description of the Drawings]
[Drawing 1]It is the block diagram showing an example of the configuration of the information processing system with which the image printing approach concerning the gestalt of operation of this invention is applied.
[Drawing 2]It is a conceptual diagram until the data relevant to the control program which performs the image-processing approach concerning the gestalt of this operation are read into a central-process arithmetic unit from a medium reader or storage, a printing instruction is inputted from an input device and it carries out delivery printing of the data to a printer.
[Drawing 3]It is drawing which explains the driver part of drawing 2 in detail focusing on the contents of processing.
[Drawing 4]It is drawing which was simplified as a data format and expressed the plane for drawing field distinction based on the multiple-value bit map, and (A) shows a multiple-value bit map and drawing where (B) explains a drawing field attribute distinction flag bit, (C), or (E) is drawing showing the example of data of the plane for each drawing field distinction.
[Drawing 5]It is drawing which was simplified as a data format and expressed the plane for drawing field distinction based on the multiple-value bit map, and (A) shows a multiple-value bit map and (B) is drawing showing an example of the drawing field attribute distinction flag according to line.
[Drawing 6]Color processing is applied to what copied data to the work-piece field classified by object attribute according to the object attribute from a multiple-value bit map based on the plane for drawing field distinction, it is drawing explaining how to copy to the destination, (A) shows a multiple-value bit map, and (B) thru/or (C) are drawings showing the example of a flag and its example of destination data of a work-piece field according to object attribute, respectively.
[Drawing 7]It is drawing explaining the condition that the control program and associated data of the image-processing approach concerning the gestalt of this operation are loaded to a computer through FD.
[Drawing 8]The control program which performs the image-processing approach concerning the gestalt of this operation is drawing showing the memory map stored in FD.
[Drawing 9]It is drawing showing a memory map when the control program which performs the image-processing approach concerning the gestalt of this operation is loaded to main storage.
[Drawing 10]It is a flow chart explaining processing by the control program of the image-processing approach concerning the gestalt of operation of this invention.

DRAWINGS

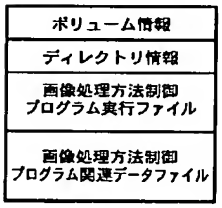
[Drawing 1]



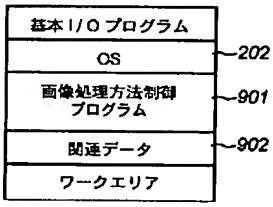
[Drawing 2]



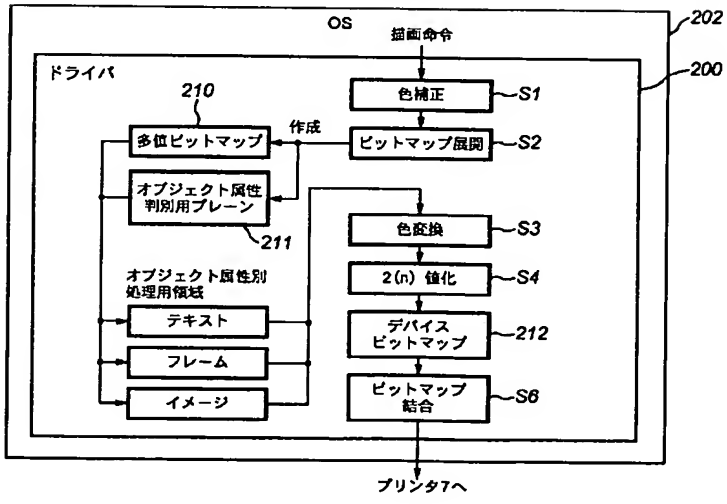
[Drawing 8]



[Drawing 9]



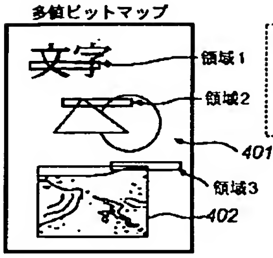
[Drawing 3]



[Drawing 4]

(A)

多値ビットマップ



(B)

描画領域判別用領域フラグビット

文字フラグビット —1
グラフィックスフラグビット —2
イメージフラグビット —4

(C)

描画領域判別用プレーン-領域1

0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0
0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0
0	0	0	0	1	1	0	0	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1
0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0
0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0

(D)

描画領域判別用プレーン-領域2

2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2
2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2
2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2
2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2

(E)

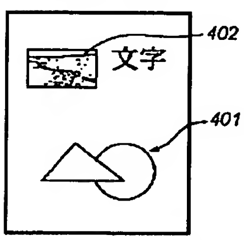
描画領域判別用プレーン-領域3

4	4	4	4	4	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0
4	4	4	4	4	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0
4	4	4	4	4	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0
4	4	4	4	4	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0
4	4	4	4	4	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0
4	4	4	4	4	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0

[Drawing 5]

(A)

多値ビットマップ

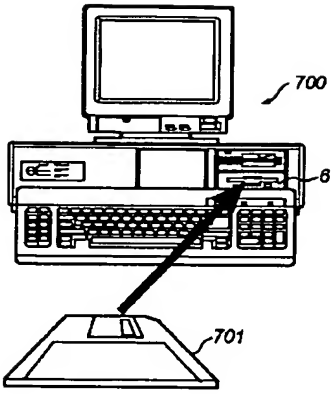


(B)

ライン別描画判定用領域

0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	1	1	1	1	5	5	5	5	5	5	5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
4	4	4	4	4	4	4	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	2	2	2	2	2	2	2
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

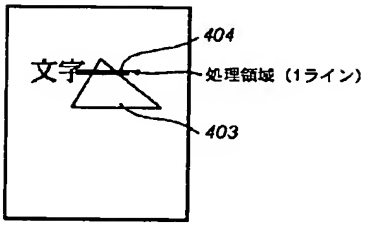
[Drawing 7]



[Drawing 6]

（A）

多値ビットマップ



（B）

オブジェクト属性別ワーク領域-テキスト

00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00
FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

（C）

オブジェクト属性別ワーク領域-グラフィックス

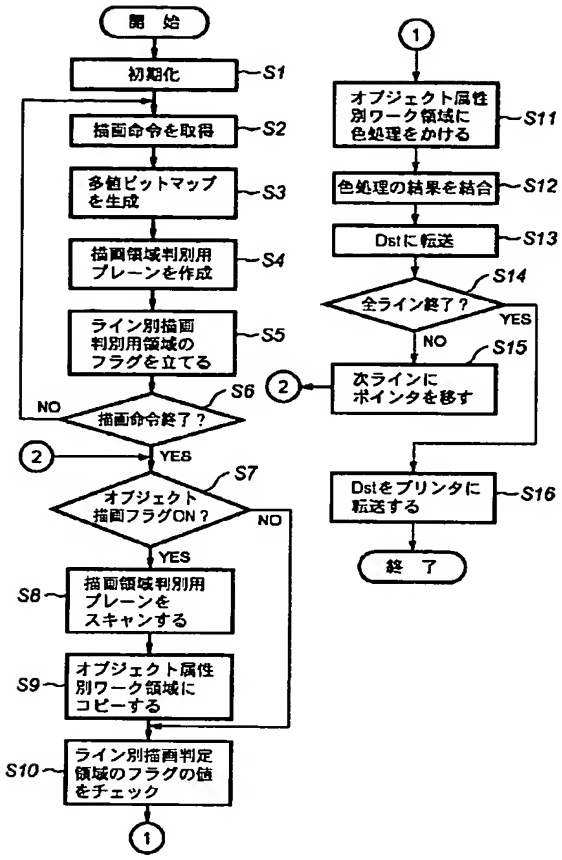
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00
FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00
00 00 FF 00 00 00 FF 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

（D）

転送先

00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00
FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00
FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00 00 FF 00 00
00 00 FF 00 00 00 FF 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

[Drawing 10]


開 始
初期化
S1
描画命令を取得
S2
多値ビットマップを生成
S3
描画領域判別用プレーンを作成
S4
ライン別描画判別用領域のフラグを立てる
S5
描画命令終了？
S6
NO
YES
オブジェクト描画フラグON？
S7
NO
YES
描画領域判別用プレーンをスキャンする
S8
オブジェクト属性別ワーク領域にコピーする
S9
ライン別描画判定領域のフラグの値をチェック
S10
1
2
オブジェクト属性別ワーク領域に色処理をかける
S11
色処理の結果を結合
S12
Dstに転送
S13
全ライン終了？
S14
YES
NO
次ラインにポインタを移す
S15
Dstをプリンタに転送する
S16
終 了